

Welding 4: GTAW

Time: 40 hours

Maximum Class Size: 8

Prerequisites:

- Oxyfuel Cutting (16 hours)
- Introduction to Arc Welding (24 hours)

Course Description: As the construction industry evolves into a more diverse and complex industry, Construction Craft Laborers are called upon to complete tasks that require advanced skills and knowledge. This course seeks to prepare the participant who already possesses basic welding skills for increasingly more complex welding tasks. The 40-hour Welding 4: GTAW (Gas Tungsten Arc Welding) course covers the basics of gas tungsten arc welding, types of torches, machine set-up, TIG welding with foot amptrol, and creating welds with or without filler. Participants are given ample time to practice all concepts presented and are required to successfully complete a written exit exam and welding project.

Goals/Objectives/Student Learning Outcomes:

- Identify the various types of tungsten electrodes
- Properly sharpen tungsten
- Safely use argon gas
- Identify the effects of argon gas on the human body
- Set up the GTAW welding machine for different types of metals
- Describe the positives and negatives of water-cooled torches
- Describe the positives and negatives of air-cooled torches
- Demonstrate how to properly prepare metal for welding
- Run quality bead without filler material on 1/8" plate
- Run quality bead with filler material on 1/8" plate
- Successfully complete an individual GTAW project
- Successfully complete a written GTAW exit exam

Standards

- 29 CFR 1926.95 Subpart E: Personal Protective Equipment
- 29 CFR 1926.150 Subpart F: Fire Protection
- 29 CFR 1926.151 Subpart F: Fire Prevention

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- 29 CFR 1910.254 Subpart J: Arc Welding/Cutting
- 29 CFR 1926.352 Subpart J: Fire Watch
- 29 CFR 1926.353 Subpart J: Ventilation and Protection in Welding, Cutting & Heating
- 29 CFR 1926.354 Subpart J: Welding, Cutting & Heating in way of preservative coating

Classroom Rules and Procedures

- All classes begin at 6:30 am and end at 3:00 pm
- Upon entering classroom, all participants must sign in and be seated by 6:30 am
- Class will consist of a combination of lecture, video, demonstration, coached group exercises, individual exercises and assessment.
- Students are required to report to class ready to work and maintain the provided PPE

Textbooks/Readings/Materials:

- *LIUNA: Fire Watch IG*
- *LIUNA: Subpart E: PPE IG/PG*
- *LIUNA: Subpart J: Welding and Cutting IG/PG*
- GTAW Pretest
- Handouts: Chromium & Nickel in Welding Fume, Fire and Explosion Prevention, Hot Work in Confined Spaces, California Proposition 65, Thoriated Tungsten Electrodes, Ventilation for Welding & Cutting (American Welding Society Safety and Health Fact Sheets #4, 6, 11, 23, 27 & 36)
- DVD: TIG Welding by Mister Tig
- DVD: TIG Welding by Covell

Tools/Equipment/Other Materials:

- GTAW Welding machine
- Torches: Scratch start, Amptrol, Foot Pedal
- Tungsten
- Filler Rod
- Welding coupons

Personal Protective Equipment

- 10 pairs of leather cutting gloves

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- 10 pairs of safety glasses
- 20 pairs of earplugs
- 10 hard hats
- 10 leather chaps
- 10 welding jackets
- 10 welding hoods

Course Requirements

To receive credit for the course, participants must:

- Be present for full 40 hours
- Participate in all classroom exercises
- Pass a written exam
- Pass a hands-on exam
- Complete a welding project

Course Policies

- Participants must be on-time and ready to work.
- Participants must return from breaks on-time.
- Participants must participate in each exercise and assignment
- Participants who are on “light duty” are not allowed to take this course due to the physically demanding requirements.

Assessment and Grading

Participants will be assessed on the following:

- All written exams must be passed with a score of 80% or above.
- All hands-on exercises and projects are graded on performance and participation. They are pass/fail and must be passed with a score of 80% or above.

Safety

Failure to maintain and use PPE may result in dismissal from the course.